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Sequence Listing was accepted.

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217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: Fri Oct 12 13:51:26 EDT 2007

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Application No: 10561235 Version No: 2.0

Input Set:

Output Set:

Started: 2007-10-01 17:39:32.594

Finished: 2007-10-01 17:39:32.948

Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 354 ms

Total Warnings: 0

Total Errors: 0

No. of SeqIDs Defined: 7

Actual SeqID Count: 7

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<120> Immunogenic Compositions Comprising Multiple Gonococcal Antigens

<130> P034643WO

<140> 10561235

<141> 2007-10-01

<150> PCT/IB2004/002421

<151> 2004-06-25

<150> 0315021.6

<151> 2003-06-26

<160> 7

<170> SeqWin99, version 1.02

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<213> Neisseria gonorrhoeae

<400> 1

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<210> 2

<211> 225

<212> PRT

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<400> 2

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1 5 10 15

Ala Leu Ser Gly Cys Val Ala Asp Pro Val Thr Gly Gln Gln Ser Pro

20 25 30

Asn Lys Ser Ala Met Tyr Gly Leu Gly Gly Ala Ala Val Cys Gly Ile

35 40 45

Val Gly Ala Leu Thr His Ser Gly Lys Gly Ala Arg Asn Ser Ala Leu

50 55 60

Ala Cys Gly Ala Ile Gly Ala Gly Val Gly Gly Tyr Met Asp Tyr Gln

65 70 75 80

Glu Gln Arg Leu Arg Gln Asn Leu Ala Gly Thr Gln Ile Glu Ile Gln

85 90 95

Arg Gln Gly Asn Gln Ile Arg Leu Val Met Pro Glu Ser Val Thr Phe

100 105 110

Ala Thr Gly Ser Ala Ala Leu Gly Gly Ser Ala Gln Tyr Ala Leu Asn
115 120 125

Thr Ala Ala Gln Thr Leu Val Gln Tyr Pro Asp Thr Thr Leu Thr Ile
130 135 140

Asn Gly His Thr Asp Asn Thr Gly Ser Asp Ala Val Asn Asn Pro Leu
145 150 155 160

Ser Gln His Arg Ala Gln Ala Val Ala Tyr Tyr Leu Gln Thr Arg Gly
165 170 175

Val Ala Ala Ser Arg Leu Thr Val Tyr Gly Tyr Gly Ser His Met Pro
180 185 190

Val Ala Ser Asn Ala Thr Val Glu Gly Arg Ala Gln Asn Arg Arg Val
195 200 205

Glu Ile Leu Ile Asn Pro Asp Gln Arg Ala Val Asn Ala Ala Arg His
210 215 220

Met
225

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<213> Neisseria gonorrhoeae

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1 5 10 15

Ser Phe Thr Met Ile Arg Leu Thr Arg Ala Phe Ala Ala Ala Leu Ile
20 25 30

Gly Leu Cys Cys Thr Thr Gly Ala His Ala Asp Thr Phe Gln Lys Ile
35 40 45

Gly Phe Ile Asn Thr Glu Arg Ile Tyr Leu Glu Ser Lys Gln Ala Arg
50 55 60

Asn Ile Gln Lys Thr Leu Asp Gly Glu Phe Ser Ala Arg Gln Asp Glu
65 70 75 80

Leu Gln Lys Leu Gln Arg Glu Gly Leu Asp Leu Glu Arg Gln Leu Ala
85 90 95

Gly Gly Lys Leu Lys Asp Ala Lys Lys Ala Gln Ala Glu Glu Lys Trp
100 105 110

Arg Gly Leu Val Glu Ala Phe Arg Lys Lys Gln Ala Gln Phe Glu Glu
115 120 125

Asp Tyr Asn Leu Arg Arg Asn Glu Glu Phe Ala Ser Leu Gln Gln Asn
130 135 140

Ala Asn Arg Val Ile Val Lys Ile Ala Lys Gln Glu Gly Tyr Asp Val
 145 150 155 160

Ile Leu Gln Asp Val Ile Tyr Val Asn Thr Gln Tyr Asp Val Thr Asp
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Ser Val Ile Lys Glu Met Asn Ala Arg
 180 185

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 20 25 30

Glu Pro Ala Ala Ala Ser Ala Ala Gln Gly Asp Thr Ser Ser Ile Gly
 35 40 45

Ser Thr Met Gln Gln Ala Ser Tyr Ala Met Gly Val Asp Ile Gly Arg
 50 55 60

Ser Leu Lys Gln Met Lys Glu Gln Gly Ala Glu Ile Asp Leu Lys Val
 65 70 75 80

Phe Thr Asp Ala Met Gln Ala Val Tyr Asp Gly Lys Glu Ile Lys Met
 85 90 95

Thr Glu Glu Gln Ala Gln Glu Val Met Met Lys Phe Leu Gln Glu Gln
 100 105 110

Gln Ala Lys Ala Val Glu Lys His Lys Ala Asp Ala Lys Ala Asn Lys
 115 120 125

Glu Lys Gly Glu Ala Phe Leu Lys Glu Asn Ala Ala Lys Asp Gly Val
 130 135 140

Lys Thr Thr Ala Ser Gly Leu Gln Tyr Lys Ile Thr Lys Gln Gly Glu
 145 150 155 160

Gly Lys Gln Pro Thr Lys Asp Asp Ile Val Thr Val Glu Tyr Glu Gly
 165 170 175

Arg Leu Ile Asp Gly Thr Val Phe Asp Ser Ser Lys Ala Asn Gly Gly
 180 185 190

Pro Ala Thr Phe Pro Leu Ser Gln Val Ile Pro Gly Trp Thr Glu Gly
 195 200 205

Val Arg Leu Leu Lys Glu Gly Gly Glu Ala Thr Phe Tyr Ile Pro Ser
 210 215 220

Asn Leu Ala Tyr Arg Glu Gln Gly Ala Gly Glu Lys Ile Gly Pro Asn
 225 230 235 240

Ala Thr Leu Val Phe Asp Val Lys Leu Val Lys Ile Gly Ala Pro Glu
 245 250 255

Asn Ala Pro Ala Lys Gln Pro Asp Gln Val Asp Ile Lys Lys Val Asn
 260 265 270

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 <212> PRT
 <213> Neisseria gonorrhoeae

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 1 5 10 15

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 20 25 30

Glu Lys Ile Gly Trp Ile Leu Val Leu Asp Lys Glu Gly Arg Leu Lys
 35 40 45

Thr Val Val Pro Asn Leu Thr Ala Asp Lys Lys Pro Gln Pro Lys Leu
 50 55 60

Met Ser Val Pro Arg Pro Glu Lys Arg Thr Ser Gly Ile Lys Pro Asn
 65 70 75 80

Phe Leu Trp Asp Lys Thr Ala Tyr Ala Leu Gly Val Glu Ala Asn Lys
 85 90 95

Asn Lys Ala Glu Ala Lys Glu Lys Pro Phe Thr Pro Ser Glu Lys Thr
 100 105 110

Phe Glu Ala Phe Lys Gln Tyr His Leu Asp Leu Leu Gln Asn Ser Glu
 115 120 125

Asp Glu Gly Leu Gln Ala Leu Cys Arg Phe Leu Gln Asn Trp Gln Pro
 130 135 140

Ala His Phe Ala Ala Glu Asn Leu Pro Ala Glu Met Leu Asp Ser Asn
 145 150 155 160

Thr Ala Phe Ser Leu Glu Lys Pro Thr Ala Leu Ile His Lys Arg Glu
 165 170 175

Ala Ala Gln Thr Leu Trp Ala Gly Cys Leu Lys Ser Asp Glu Ala Leu
 180 185 190

Glu Ser Leu Cys Leu Ile Ser Gly Asp Thr Ala Pro Ile Ala Arg Leu
 195 200 205

His Pro Ala Ile Lys Gly Val Phe Gly Gly Gln Ser Ser Gly Gly Ser

| | | | | | | | | | | | | | | | |
|---------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 210 | | | | 215 | | | | 220 | | | | | | | |
| Ile 225 | Ile | Ser | Phe | Asn | Lys | Glu | Ala | Phe | Ser | Ser | Phe | Gly | Lys | Glu | Gln |
| | | | | 230 | | | | 235 | | | | 240 | | | |
| Gly | Ala | Asn | Ala | Pro | Val | Ser | Glu | Gln | Ser | Ala | Phe | Ala | Tyr | Thr | Thr |
| | | | | 245 | | | | 250 | | | | 255 | | | |
| Ala | Leu | Asn | Tyr | Leu | Leu | Arg | Arg | Glu | Asn | Asn | His | Cys | Leu | Thr | Ile |
| | | | | 260 | | | | 265 | | | | 270 | | | |
| Gly | Asp | Ala | Ser | Thr | Val | Phe | Trp | Ala | Glu | Ala | Asp | Asp | Ile | Val | Asp |
| | | | | 275 | | | | 280 | | | | 285 | | | |
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| <211> | 550 | | | | | | | | | | | | | | |
| <212> | PRT | | | | | | | | | | | | | | |
| <213> | Neisseria gonorrhoeae | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| <400> | 6 | | | | | | | | | | | | | | |
| Met 1 | Val | Ala | Tyr | Ala | Phe | Leu | Phe | Leu | Phe | Val | Thr | Ala | Ala | Val | Leu |
| | | | | 5 | | | | 10 | | | | 15 | | | |
| Leu | Ile | Val | Arg | Ser | His | Tyr | Arg | Trp | Thr | Tyr | Phe | Phe | Ala | Ser | Ala |
| | | | | 20 | | | | 25 | | | | 30 | | | |
| Leu | Phe | Val | Phe | Leu | Ala | Gly | Gly | Met | Leu | Met | Leu | Thr | Ala | Gln | Trp |
| | | | | 35 | | | | 40 | | | | 45 | | | |
| Gln | Arg | Ala | Leu | Asn | Phe | Ala | Ser | Val | Trp | Phe | Val | Val | Leu | Ile | Leu |
| | | | | 50 | | | | 55 | | | | 60 | | | |
| Phe 65 | His | Arg | Leu | Lys | Ile | His | Tyr | Tyr | Lys | Gln | Pro | Leu | Leu | Ile | Ser |
| | | | | 70 | | | | 75 | | | | 80 | | | |
| Asp | Phe | Leu | Leu | Ile | Ala | Asp | Trp | Arg | Asn | Trp | Glu | Thr | Leu | Phe | His |
| | | | | 85 | | | | 90 | | | | 95 | | | |
| Tyr | Lys | Glu | Ala | Val | Ile | Gly | Met | Ala | Gly | Leu | Leu | Ala | Leu | Ala | Gly |
| | | | | 100 | | | | 105 | | | | 110 | | | |
| Tyr | Ala | Val | Phe | Gly | Trp | Ser | Gly | Ala | Asp | Ser | Leu | Gly | Met | Pro | Trp |
| | | | | 115 | | | | 120 | | | | 125 | | | |
| Arg | Trp | Ala | Gly | Ala | Val | Leu | Phe | Ala | Ala | Ala | Phe | Val | Ser | Val | Arg |
| | | | | 130 | | | | 135 | | | | 140 | | | |
| His 145 | Phe | Ser | Lys | His | Pro | Gly | Ala | Val | Lys | Thr | Trp | Leu | Asp | Ser | Leu |
| | | | | 150 | | | | 155 | | | | 160 | | | |
| Pro | Asp | Asp | Gly | Arg | Asp | Val | Phe | Leu | Asn | Leu | Pro | Met | Ser | Cys | Arg |
| | | | | 165 | | | | 170 | | | | 175 | | | |
| Ala | Val | Phe | Phe | Gln | Val | Pro | Val | Phe | Glu | Gly | Asp | Gly | Glu | Ala | Phe |
| | | | | 180 | | | | 185 | | | | 190 | | | |

| | | |
|---|-----|---------|
| Ala Arg Gln Met Pro Ser Glu Thr Arg Pro Tyr Gly Met Ser Asp Glu | | |
| 195 | 200 | 205 |
| Lys Pro Asp Ile Val Val Thr Leu Met Glu Ser Thr Leu Asp Pro His | | |
| 210 | 215 | 220 |
| Cys Phe Asp Phe Ala Ala Ala Lys Ile Pro Asp Leu Lys Met Phe Gly | | |
| 225 | 230 | 235 240 |
| Arg Gln Glu Asp Thr Val Phe Ser Ser Pro Leu Arg Val His Thr Phe | | |
| | 245 | 250 255 |
| Gly Gly Ala Thr Trp Lys Ser Glu Phe Ala Phe Leu Ala Gly Val Pro | | |
| | 260 | 265 270 |
| Ser Thr Asp Phe Gly Ala Leu Ala Ser Gly Val Phe Tyr Ser Val Val | | |
| | 275 | 280 285 |
| Pro His Leu Gln Thr Gly Phe Val Arg Asn Leu Arg Glu His Gly Tyr | | |
| | 290 | 295 300 |
| Phe Cys Val Ala Leu Ser Pro Phe Thr Lys Gly Asn Tyr Asn Ala Lys | | |
| 305 | 310 | 315 320 |
| Ala Ala Tyr Asp His Phe Gly Phe Asn Leu Met Phe Gln Pro Gln Asp | | |
| | 325 | 330 335 |
| Leu Gly Tyr Pro Ala Pro Met Gly Lys Asn Leu Trp His Ile Ser Ser | | |
| | 340 | 345 350 |
| Glu Glu Met Met Gln Tyr Ala Arg Met Ile Leu Glu Lys Arg His Pro | | |
| | 355 | 360 365 |
| Asp Leu Glu Asn Val Arg Gln Pro Met Phe Val Tyr Val Leu Thr Met | | |
| | 370 | 375 380 |
| Lys Glu His Gly Pro Tyr Arg Thr Asp Thr Asp Asn Val Phe Asp Leu | | |
| 385 | 390 | 395 400 |
| Asp Ala Pro Asp Leu Asn Ala Lys Thr Val Ser Ala Leu Asn Asp Tyr | | |
| | 405 | 410 415 |
| Ile Gly Arg Ile Ala Asp Leu Asp Lys Ala Val Glu Ser Phe Asp Arg | | |
| | 420 | 425 430 |
| Tyr Leu His Glu Arg Gly Lys Pro Phe Val Phe Gly Tyr Phe Gly Asp | | |
| | 435 | 440 445 |
| His Gln Val Pro Phe Glu Gly Val Ser Val Arg Lys Lys Trp Asp Tyr | | |
| | 450 | 455 460 |
| Ala Gln Pro Asp Tyr Val Thr Gln Phe Ala Val Arg Ser Asn Ile Ala | | |
| 465 | 470 | 475 480 |
| Gly Gly Phe Val Gln Arg Gln Asp Phe Leu Asp Leu Ala Phe Ala Gly | | |
| | 485 | 490 495 |

Gly Val Leu Met Glu Ala Ala Gly Leu Glu Ala Lys Asp Gly Phe Met
500 505 510

Arg Ala Asn Met Ala Met Arg Gly Leu Cys Gly Gly Gly Leu Glu Asp
515 520 525

Cys Pro Asn Arg Glu Leu Val Gly Asn Tyr Arg Asn Tyr Leu Tyr Asp
530 535 540

Val Leu Lys Ile Ala Arg
545 550

<210> 7
<211> 1468
<212> PRT
<213> Neisseria gonorrhoeae

<400> 7
Met Lys Thr Thr Asp Lys Arg Thr Thr Glu Thr His Arg Lys Ala Pro
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Lys Thr Gly Arg Ile Arg Phe Ser Pro Ala Tyr Leu Ala Ile Cys Leu
20 25 30

Ser Phe Gly Ile Leu Pro Gln Ala Arg Ala Gly His Thr Tyr Phe Gly
35 40 45

Ile Asn Tyr Gln Tyr Tyr Arg Asp Phe Ala Glu Asn Lys Gly Lys Phe
50 55 60

Ala Val Gly Ala Lys Asp Ile Glu Val Tyr Asn Lys Lys Gly Glu Leu
65 70 75 80

Val Gly Lys Ser Met Thr Lys Ala Pro Met Ile Asp Phe Ser Val Val
85 90 95

Ser Arg Asn Gly Val Ala Ala Leu Ala Gly Asp Gln Tyr Ile Val Ser
100 105 110

Val Ala His Asn Gly Gly Tyr Asn Asn Val Asp Phe Gly Ala Glu Gly
115 120 125

Ser Asn Pro Asp Gln His Arg Phe Ser Tyr Gln Ile Val Lys Arg Asn
130 135 140

Asn Tyr Lys Ala Gly Thr Asn Gly His Pro Tyr Gly Gly Asp Tyr His
145 150 155 160

Met Pro Arg Leu His Lys Phe Val Thr Asp Ala Glu Pro Val Glu Met
165 170 175

Thr Ser Tyr Met Asp Gly Trp Lys Tyr Ala Asp Leu Asn Lys Tyr Pro
180 185 190

Asp Arg Val Arg Ile Gly Ala Gly Arg Gln Tyr Trp Arg Ser Asp Glu
195 200 205

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Glu | Pro | Asn | Asn | Arg | Glu | Ser | Ser | Tyr | His | Ile | Ala | Ser | Ala | Tyr | 210 | 215 | 220 | |
| Ser | Trp | Leu | Val | Gly | Gly | Asn | Thr | Phe | Ala | Gln | Asn | Gly | Ser | Gly | Gly | 225 | 230 | 235 | 240 |
| Gly | Thr | Val | Asn | Leu | Gly | Ser | Glu | Lys | Ile | Lys | His | Ser | Pro | Tyr | Gly | 245 | 250 | 255 | |
| Phe | Leu | Pro | Thr | Gly | Gly | Ser | Phe | Gly | Asp | Ser | Gly | Ser | Pro | Met | Phe | 260 | 265 | 270 | |
| Ile | Tyr | Asp | Ala | Gln | Lys | Gln | Lys | Trp | Leu | Ile | Asn | Gly | Val | Leu | Gln | 275 | 280 | 285 | |
| Thr | Gly | Asn | Pro | Tyr | Ile | Gly | Lys | Ser | Asn | Gly | Phe | Gln | Leu | Val | Arg | 290 | 295 | 300 | |
| Lys | Asp | Trp | Phe | Tyr | Asp | Glu | Ile | Phe | Ala | Gly | Asp | Thr | His | Ser | Val | 305 | 310 | 315 | 320 |
| Phe | Tyr | Glu | Pro | His | Gln | Asn | Gly | Lys | Tyr | Phe | Phe | Asn | Asp | Asn | Asn | 325 | 330 | 335 | |
| Asn | Gly | Ala | Gly | Lys | Ile | Asp | Ala | Lys | His | Lys | His | Tyr | Ser | Leu | Pro | 340 | 345 | 350 | |
| Tyr | Arg | Leu | Lys | Thr | Arg | Thr | Val | Gln | Leu | Phe | Asn | Val | Ser | Leu | Ser | 355 | 360 | 365 | |
| Glu | Thr | Ala | Arg | Glu | Pro | Val | Tyr | His | Ala | Ala | Gly | Gly | Val | Asn | Ser | 370 | 375 | 380 | |
| Tyr | Arg | Pro | Arg | Leu | Asn | Asn | Gly | Glu | Asn | Ile | Ser | Phe | Ile | Asp | Lys | 385 | 390 | 395 | 400 |
| Gly | Lys | Gly | Glu | Leu | Ile | Leu | Thr | Ser | Asn | Ile | Asn | Gln | Gly | Ala | Gly | 405 | 410 | 415 | |
| Gly | Leu | Tyr | Phe | Glu | Gly | Asn | Phe | Thr | Val | Ser | Pro | Lys | Asn | Asn | Glu | 420 | 425 | 430 | |
| Thr | Trp | Gln | Gly | Ala | Gly | Val | His | Ile | Ser | Asp | Gly | Ser | Thr | Val | Thr | 435 | 440 | 445 | |
| Trp | Lys | Val | Asn | Gly | Val | Ala | Asn | Asp | Arg | Leu | Ser | Lys | Ile | Gly | Lys | 450 | 455 | 460 | |
| Gly | Thr | Leu | Leu | Val | Gln | Ala | Lys | Gly | Glu | Asn | Gln | Gly | Ser | Val | Ser | 465 | 470 | 475 | 480 |
| Val | Gly | Asp | Gly | Lys | Va | | | | | | | | | | | | | | |